

Autonomy by Drawing: Gianugo Polesello on Route 66

Original

Autonomy by Drawing: Gianugo Polesello on Route 66 / Corbellini, G.. - In: FOOTPRINT. - ISSN 1875-1490. - 2018:(2018), pp. 103-112. [10.7480/footprint.12.1.1783]

Availability:

This version is available at: 11583/2712141 since: 2018-09-02T18:49:22Z

Publisher:

Japsam Books

Published

DOI:10.7480/footprint.12.1.1783

Terms of use:

openAccess

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

Publisher copyright

(Article begins on next page)

EXPLORING ARCHITECTURAL FORM: A CONFIGURATIVE TRIAD

SPRING / SUMMER 2018

Introduction

Transversing Formalisms

Stavros Kousoulas and Jorge Mejía Hernández, editors

The Grace Machine: Of Turns, Wheels and Limbs

Lars Spuybroek

The Diagrammatic Inquiry of Architectural Media

Peter Bertram

**Reconceptualisation of Architects' Intentionality
in Computational Form Generation: A Tripartite Model**

Duygu Tümtaş

On Bigness and the Problem of Urban Form

Armando Rabaça and Carlos Moura Martins

Calling Rowe: After-lives of Formalism in the Digital Age

Stylianios Giamarellos

Review Articles by Giovanni Corbellini; J.M. Rees; Johan Nielsen; Yves Schoonjans
and Kris Scheerlinck; Luca Di Lorenzo

Contents

Introduction

I Transversing Formalisms

Stavros Kousoulas and Jorge Mejía Hernández, editors

7 The Grace Machine: Of Turns, Wheels and Limbs

Lars Spuybroek

33 The Diagrammatic Inquiry of Architectural Media

Peter Bertram

51 Reconceptualisation of Architects' Intentionality in Computational Form Generation: A Tripartite Model

Duygu Tüntaş

65 On Bigness and the Problem of Urban Form

Armando Rabaça and Carlos Moura Martins

89 Calling Rowe: After-lives of Formalism in the Digital Age

Stylianios Giamarellos

Review Articles

103 Autonomy by Drawing: Gianugo Polesello on Route '66

Giovanni Corbellini

113 Surform: An Architectural Vocabulary of Morphogenesis

J.M. Rees

123 The Explorative Strategy of Engagement: Atelier Bow-Wow's Rebière Street Project in Paris

Johan Nielsen, Yves Schoonjans and Kris Scheerlinck

135 'Des Yeux Qui Ne Voient Pas...': The smartphones

Luca Di Lorenzo

Review Article

Autonomy by Drawing: Gianugo Polesello on Route 66

Giovanni Corbellini

The 50th anniversary of Robert Venturi's *Complexity and Contradiction in Architecture* was celebrated recently. It was not just a ritual occasion, since Venturi's is one of the most influential books of the twentieth century and the debate it partly triggered still haunts contemporary reflections.¹ His manifesto, though 'gentle' and inclusive, owes part of its enduring success to a harsh polemic with the ideology established by the protagonists of the Modern Movement: a personal 'symbolic suppression of the parents' that mirrors the need for identity affirmation of an entire generation educated in the aftermath of World War II.

A decisive shift towards the interiority of the discipline, shared by Venturi and his peers on both sides of the Atlantic, characterised that moment. If the Modern Movement founded the necessity of its 'style' as a deterministic outcome of contemporary social and productive pressures, Venturi focuses conversely on the *autonomy* of architecture as a means of regaining that centrality that the same contemporary conditions actually threatened.² The meaning of spaces and buildings, set free from the practical reasons for their existence, becomes a matter of *composition*, taking architecture onto a field where architects can express their *intentions* and still play their own role. This latter would essentially rely on reading and modifying relationships, in time and space, with the *typo-morphological contexts*. The playground of architecture, thus essentially redefined in terms of *form* and *language*, turns into a synchronic whole that allows it to freely

compare new and ancient, high and low, daily and monumental, revealing its combinatorial games. From the point of view of this 'grammar', rear- and avant-garde tend to lose reciprocity of meaning and, consequently, *tradition* transfigures into a progressive horizon; *originality*, so necessary for modernist identity, negotiates with *origins* and their interpretations; while *theory* assumes a new – and, again, autonomous – role with respect to the predominantly propagandistic function that it previously performed.

Not all the key terms of this rapid list are properly Venturian. Some of them, though they recognise common issues, refer to a different local situation. In 1966, the year of *Complexity and Contradictions in Architecture*, two important books came out in Italy. Compared to the American pamphlet, both *L'architettura della città*, by Aldo Rossi,³ and *Il territorio dell'architettura*, by Vittorio Gregotti,⁴ propose a more ambiguous relation with the modern. On the one hand, they probably did not feel this polemic urgency. As collaborators of Ernesto Nathan Rogers at the illustrious architecture journal *Casabella continuità*, Gregotti and Rossi were part of a current of thought that had already anticipated a gaze not perfectly aligned with modernist orthodoxy: the identification in some symbolic architectures of Fascism between modern language and modernisation, albeit timid and intermittent, had a role in provoking various pieces of research in the immediate post-war period. On the other hand, Italy underwent less harsh architectural Freudian conflicts, partly thanks

to the disenchanted reception of the historic avant-gardes in that country. Like the Americans, Italians primarily understood and manipulated the aesthetic dimension of these avant-gardes, but tempered by cultural peculiarities and systemic backwardness that made their languages less plausible as representational tools for a still underdeveloped society.⁵ The Mediterranean, Roman-classical interpretation imposed by Fascist rhetoric comes out in the Beaux-Arts version of Giuseppe Terragni's *Novocomum*, 1928, and in Giuseppe Vaccaro's *Palazzo delle Poste* in Naples, 1933. These were smart gimmicks aimed at introducing a modern language in a hostile context; they also show how architectural languages can be interpreted as interchangeable decorative devices: an approach that re-emerges with 'La Tendenza' from the moment of its neo-rationalist debuts.⁶ These differences of context explain only to some extent, however, a more substantial division: while Robert Venturi's manifesto develops a phenomenological, inclusive, liberating, pluralist, and pop attitude, nurtured by a sincere curiosity about the contemporary, both the Italians, faithful to Leon Battista Alberti's ideal of abstraction and vertical control, propose more elitist, politicised, paternalistic and dogmatic approaches.

Gianugo Polesello, a fellow member, with Aldo Rossi, of *Casabella's* 'think tank' of young architects and his partner in some projects, undertook a similar theoretical operation, conducted, however, through a more explicit and precise medium, to the limits of tautology: architectural design or, more precisely, architectural drawing applied to design. What can one find, in the toolbox of the architect, which is more *autonomous*, *internal* to the *discipline*, linked to *form*, demonstrating *compositional* operations, capable of experimenting and fixing terms and correlations of *language*? The project that made Polesello into the theoretical architect he wanted to be is the proposal for the offices of the House of Representatives in Rome, in 1966. [Fig. 1] In this important year, his characteristic

compositional vocabulary appears fully formed. It is a vocabulary made of primary forms (equilateral triangles, squares, circles), of geometries associated with them (the orthogonal grid contrasted with the median and diagonal lines of the figures used), of absolute archetypes (columns, arcades, galleries, walls...), of classic urban elements (forums, markets...), of recurring numbers (3, 4 or 9 towers; 16 or 25 columns, multiples of 1.5 or 1.75 metres). With this set of self-limited pieces and rules, Polesello would go on to play a single, uninterrupted game along the different projects he produced throughout his long career.⁷

Significantly, the *Electa* monograph that collects his work until 1992 removes the usual chronological organisation, proposing instead a thematic arrangement inspired by the architecture-city relationship.⁸ It seems clear that Polesello's intention was to escape the action of time on his own design approach, and to attain a legible, consistent, and steady personal style. This quest was a main concern for many protagonists of his generation and the real subject of the tough competition they engaged in: a rivalry that would otherwise be incomprehensible, since their theoretical positions were not so distant.⁹ Within the faculty of the Venetian doctoral programme where I crossed paths with Gianugo, in the late 1980s, several exponents of Rogers's progeny were present: my mentor Francesco Tentori, Polesello himself, Luciano Semerani, Guido Canella, Giorgio Grassi, and Aldo Rossi (but the future Pritzker Prize winner was playing in another league and his attendance was rare). There were, of course, differences of character and contrasts due to academic politics, but they shared, along with that of the *Casabella* think tank, other common experiences and interests: a leftist commitment, a deep attention to history and its archetypes, an inclination toward the urban dimension rather than to the detail, and a decisive rejection of the frivolousness of fashion. Such tenacious attention to their own 'sartorial' brand, in terms of architectural language, was

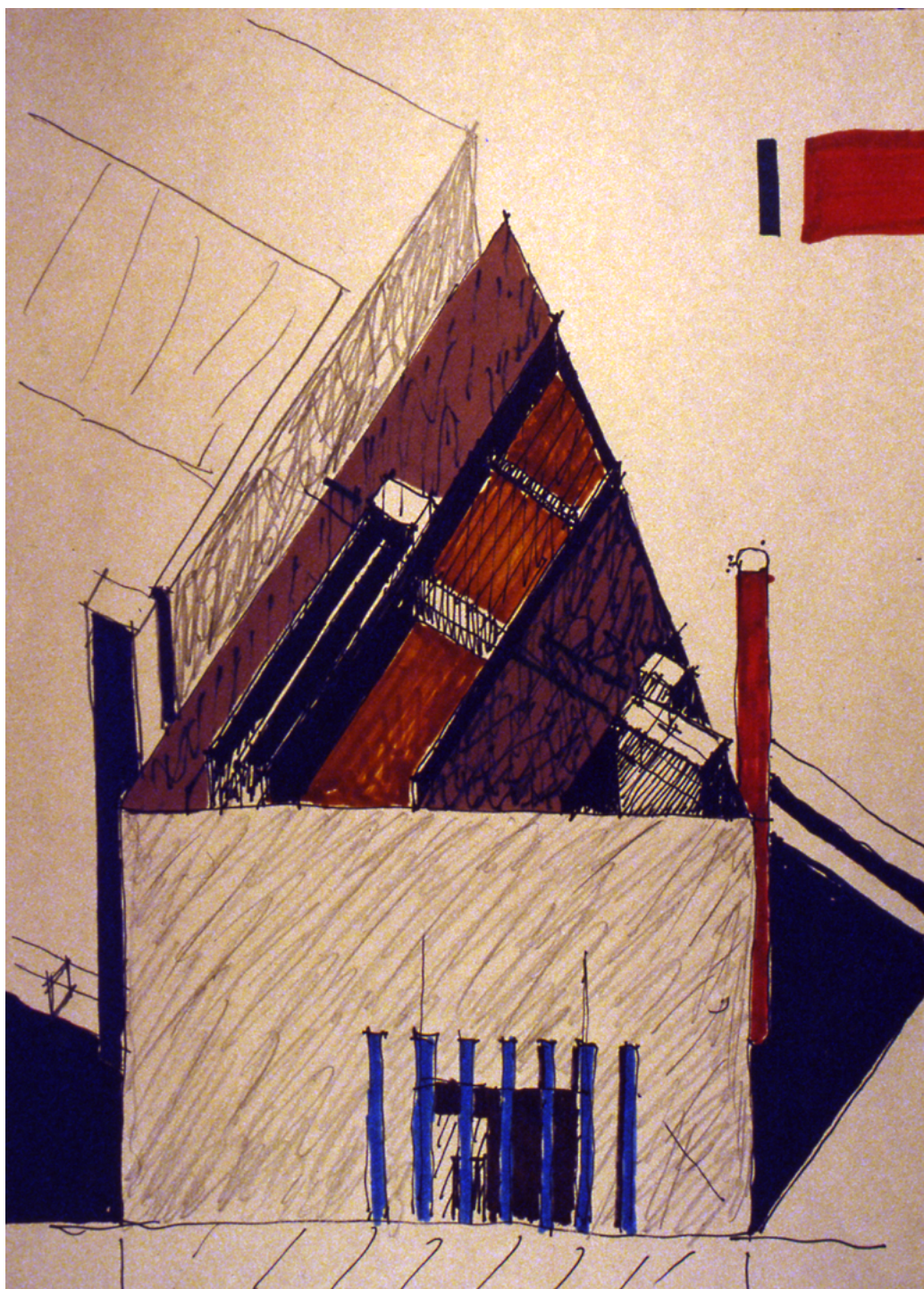


Fig. 1: Offices of the House of Representatives, Rome, 1966, axonometric sketch, courtesy of Università Iuav di Venezia, Archivio Progetti, fondo Gianugo Polesello.

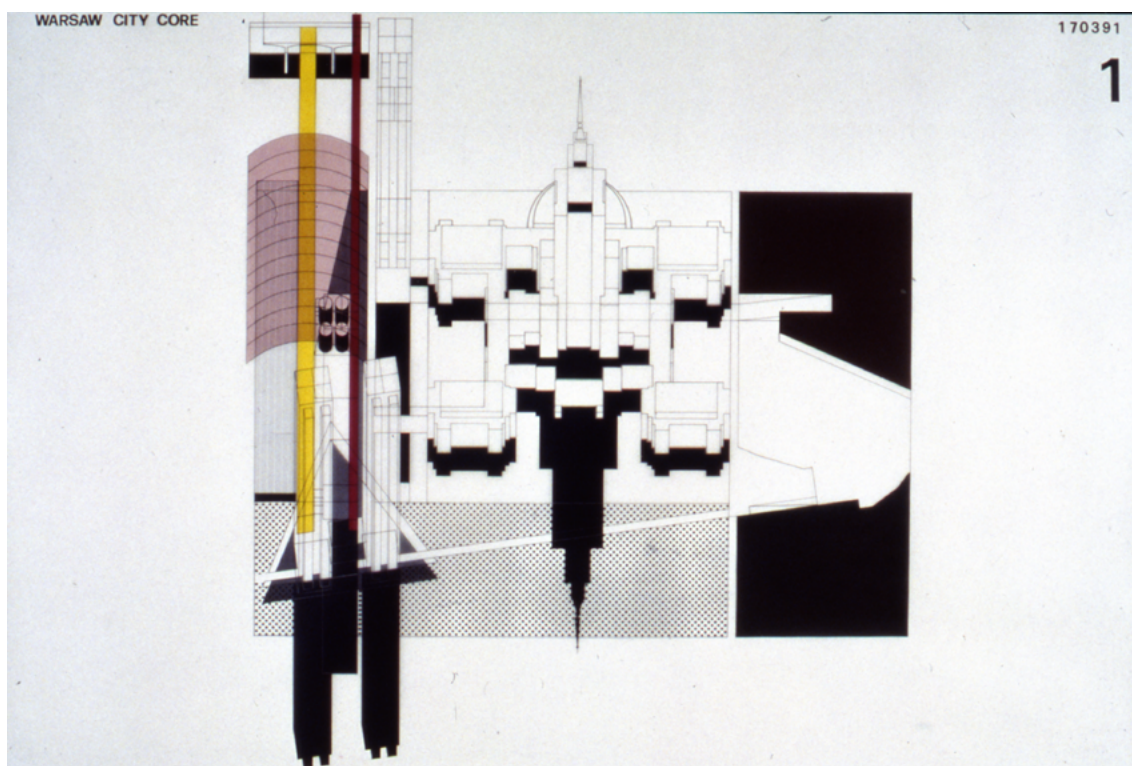


Fig. 2: Competition for Warsaw City Core, 1992, axonometric drawing, courtesy of Università Iuav di Venezia, Archivio Progetti, fondo Gianugo Polesello.

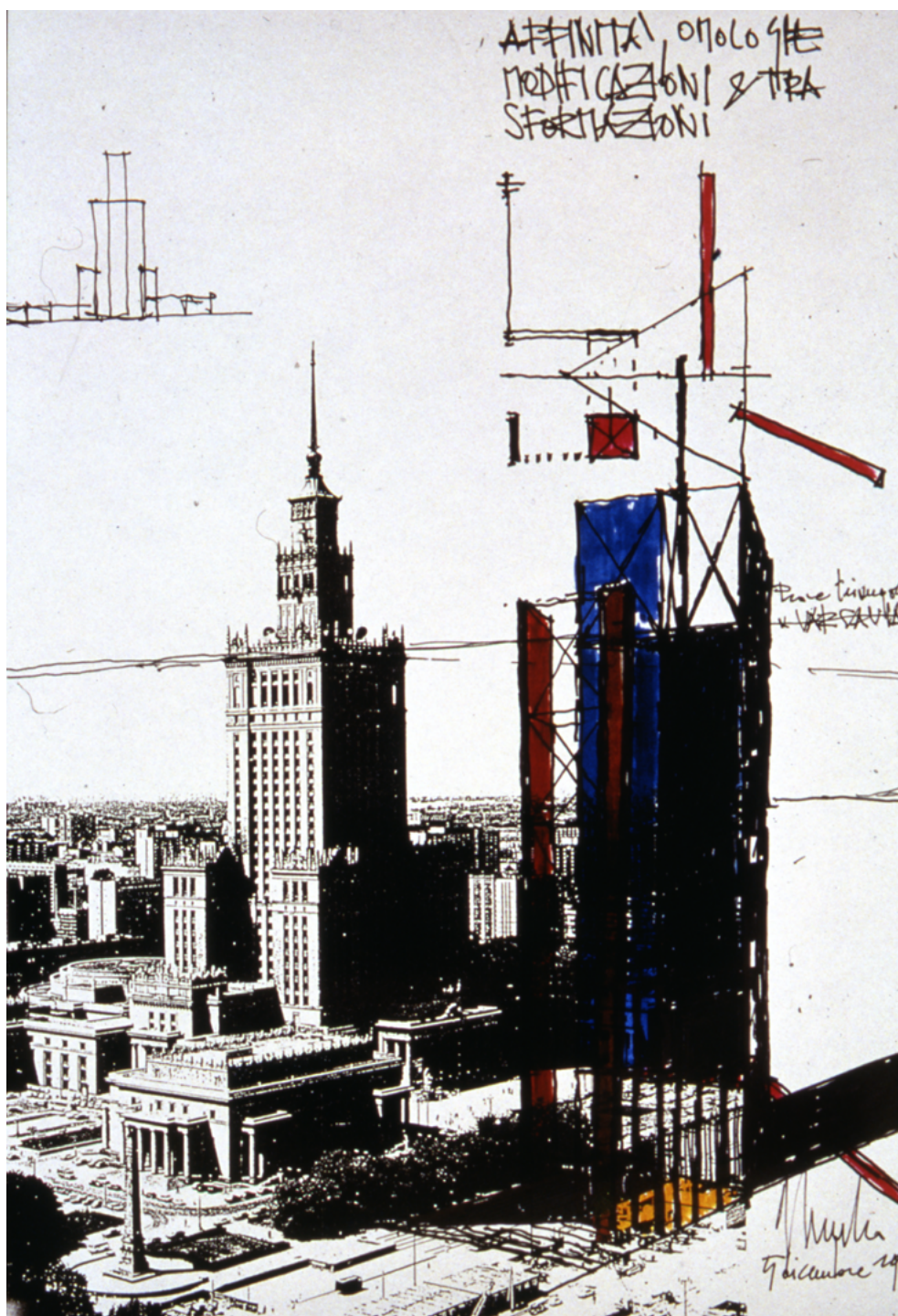


Fig. 3: Competition for Warsaw City Core, 1992, photomontage with the towers, courtesy of Università Iuav di Venezia, Archivio Progetti, fondo Gianugo Polesello.

therefore rather surprising.¹⁰ Especially because their declared theoretical intention was to delimit 'scientifically' the disciplinary action and to propose potentially exhaustive design methods. Of course, each of them pretended to believe in his own individual attitude as the one and only true architectural response. Their attempts to resist the spirit of time through the quest for the ultimate architectural language was a paradoxical expression of the spirit of time, and made the most successful of them ready to join in the 1990s the rising, fashionable phenomenon of the 'starchitects'.

Another aspect of this difficult relationship between theory and practice, stoked up by the aspiration to the 'autonomy of architecture', is the scant interest in negotiating the many facets of reality that Polesello shared with his peers. In his monograph, the rare built architecture projects tend to remain in the background, illustrated with small black and white photos, as if their realisation was incidental, a by-product of the project process and not its main reason. There are also few details and references to material, tactile or perceptual qualities, while the overall designs prevail, illustrated by 'large plans' and fantastic purist axonometric drawings, in which the coincidence of the vertical axis with that of the depth produces an acceleration towards the abstraction of the surface. [Fig. 2-3] Many of the architects who joined the faculty of the aforementioned Venetian doctoral programme cultivated an analogous radical indifference towards construction, as if to establish their own intellectual – and above all political – identity it was necessary to withstand the numerous building opportunities offered them by the Italian economic miracle. It was a radical, abstract approach, both triggered by and producing an idea of architecture conceived as a discipline rather than a profession, further influenced by the early co-optation of some of them within the school and the evolution of the latter towards a mass university.

The impact of the baby boomers on the Italian architecture schools in the 1970s and '80s was huge, and academic design studios were stuffed with several hundreds of students. The transmissibility of architectural-compositional knowledge became therefore one of the most discussed topics. Polesello's Durandian apparatus – his combinatorial mechanics of fixed elements – was a design method unfolded within a teaching perspective: a guarantee against the margins of interpretation that even the most rigorous textual theory leaves open, which allowed for the focus of the design exercises on the linguistic core specifically identified as the main experimentation ground, and to get identifiable and assessable results. The need to cope with increasing numbers of students – and assistants, to whom were necessarily delegated fundamental parts of the educational process – made this device even more appealing.

In the plurality of experiences of a five-year course of study, this teaching method may even sound plausible: exposed to different linguistic 'sects', the student had to develop his or her own synthesis. Some perverse side effects were, however, inevitable, especially on the formation of collaborators and future teachers. Initially selected for our mimicking attitudes, our masters tried to 'design' us as doppelgängers, resulting in some cases in a grotesque cloning of behaviours and tics: even the way of sketching. It is as if these architects and professors could not help but look in the mirror and find in these 'reflections' the fundamental elements of their theoretical and didactic action. The many self-portraits Gianugo drew in his black notebooks stand out as particularly significant in this regard.¹¹ His recurring countenance, often mingled with the geometries of his design grammar, also reflects the sharp self-referentiality of his method, the rigidity of his self-discipline, and the undoubted charisma that derived from it. [Fig. 4-5]

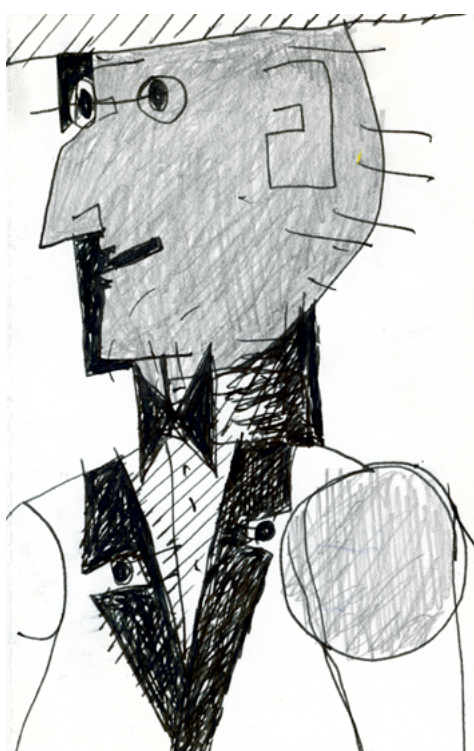


Fig. 4

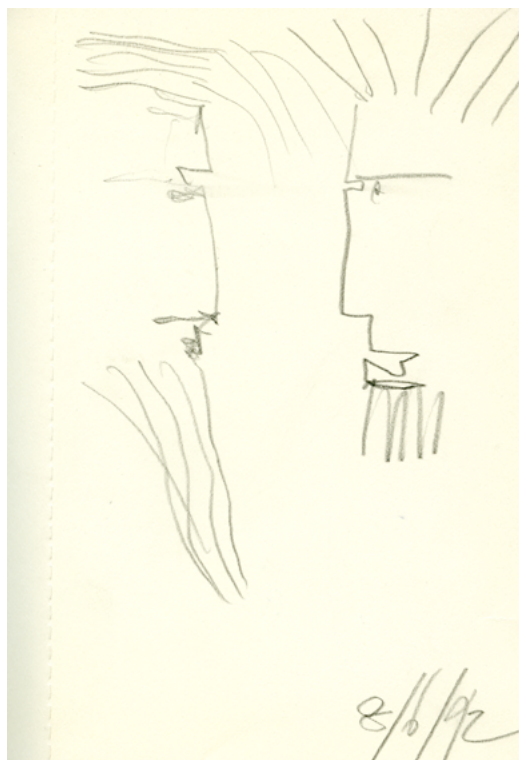


Fig. 5

Fig. 4: Self-portrait with bow tie, Notebook 35 (4 April 1990), courtesy of Università luav di Venezia, Archivio Progetti, fondo Gianugo Polesello.

Fig. 5: Double self-portrait, Notebook 52 (8 June 1992), courtesy of Università luav di Venezia, Archivio Progetti, fondo Gianugo Polesello.

What kind of teacher was Polesello? I recently came across a description of teaching, valid especially for art disciplines, which identifies two opposite modes, both mutually effective and incomplete. On the one hand, there are teachers who try to explain the structure of things, with the ambition to give meaning to an open process but knowing that there is often a gap between words and forms. On the other hand, there are those who teach through examples to imitate, educating students with rewards and punishments, and waiting for them to come up with their own understanding of their reasons. My experience with Gianugo was limited to the particular environment of a PhD; something mainly based on discursive exchanges and therefore not very meaningful in relation to his 'research by design' approach. The superficial impression he gave was of a logical attitude of the first type: he criticised our clumsy presentations with Cartesian eloquence, tracing clear-cut geometries in the linearity of the discourse, as if engraved in metal (his angular way of talking, often with inverted verbal constructions, somewhat resembled that of Master Yoda in *Star Wars*). But he talked mainly about and to himself, bringing the words and arguments of the debate into his specific cultural obsessions, thus revealing a more sincere penchant for a teaching approach of the second type. Again, this was a system shared with most of his colleagues determined to affirm a specific academic identity, confined to its genealogy and carefully protected from external contamination.¹²

His texts, read now, produce the same mirroring effect. They do not explain: they describe procedures that are finite in themselves and almost never connected with reasons outside geometry. It is still hard to grasp from them a critical distance capable of activating operational links between words and design. However, this might be my fault: for I long ago 'symbolically killed' my parents too, though, I hope it is clear, it was in self-defense. Does it make sense, then, apart from the formal celebrations, to

return to these events today? Is it again time for the ideologies of the sixties? Get your kicks on Route 66?¹³

It would seem so, at least when looking at what is going on in the debate about architectural theory. The economic, ecological, and social crisis we are dealing with has generated, in the academic discussion and in the reflection of the arts, an overwhelming re-emergence of political engagement, felt as a necessary alternative to the neo-liberal *pensée unique* and a way to avoid the damage it produces. The 'return to order' this movement is calling for aims to (re)produce, after postmodern relativism, a more stable and shared picture.¹⁴ The 2014 Biennale, directed by Rem Koolhaas, contributed to record this phenomenon: by assigning the theme of 'Absorbing Modernity' to the national pavilions, it obtained a response that focused on the 1960s as a period of convergence between progressive, political, technical, and aesthetic instances. In the same Venetian exhibition, the 'Monditalia' section hosted Beatriz Colomina's work with the Princeton PhD programme on 'Radical Pedagogies', focused there on the intricate Italian educational landscape of the same years, agitated by the intersections with various movements of social liberation active at the time. Despite its accuracy, the material displayed in Venice – due to the temporal, geographical and cultural distance of observation – conveyed a flattened picture of otherwise conflicting ideas and approaches. It is an impression that often arises at other discussions around these issues, mainly occurring in an international, mostly Anglo-Saxon, context and fuelled by a deferred reception of continental discussions (post-structuralist jargon and quotations seem mandatory). This prevalence of the political could also be a side effect of the ongoing separation in academia between the teaching of theories and that of design, where some compromise with capital is inevitable. Even within the protected environment of academic speculation, the attempt to resuscitate

from the sixties these architectural approaches should however consider the evident changes in historical context: the presence of a Communist bloc, for instance, was a stimulus to 'socialise' the policies of the first world, making them conceptually viable to be somehow both within and against the system.¹⁵ This attempt should also deal with some problematic consequences the attitude it is so interested in produced, as the Italian built landscape loudly reminds us. The questionable objects that populate its horizon – whether they are directly attributable to the protagonists of 'La Tendenza' and their many followers or not – are by-products of a defensive 'retrotopia', of the sick reproduction of languages within the typo-morphological paradigm that imprints Italian master plans and local codes.

A more secular, post-ideological attitude could perhaps get rid of this nostalgia of a nostalgia, longing for a mythical consistency of the political and the formal. It might discover in that research a preponderant poetic dimension, ultimately liberated from the theoretical attempts to deny it. This is what emerges as fresh content from the drawings of Gianugo Polesello today and asks for an operative re-interpretation.

Notes

This article questions the revival of the 'Tendenza' in the recent architectural debate, taking the work of Gianugo Polesello as a privileged vantage point. The Italian architect – along with Aldo Rossi, Giorgio Grassi, Guido Canella and other protagonists of that approach – taught in the Venetian PhD attended by the author, who recalls here his first-hand experience.

1. Robert Venturi, *Complexity and Contradiction in Architecture* (New York: Museum of Modern Art, 1966). Michel Kubo, 'Publishing Practices', *Volume*, 22 (2009): 20–26, asked approximately three hundred readers to indicate their fundamental architecture books; Venturi's essay was the third most voted for.
2. The word style derives from the Latin *stilus*. It is a notion strictly tied to the tools used and, therefore, to the wide context in which a work is produced. At the same time, it identifies stable aesthetical paradigms. Neither of these meanings are central for Venturi, who rather addresses the possibility to recognise systems of relationship between the whole and the parts, independently from their condition of production.
3. Aldo Rossi, *The Architecture of the City*, trans. Diane Ghirardo and Joan Ockman (Cambridge, Mass.: MIT Press, 1982 [1966]).
4. Vittorio Gregotti, *Il territorio dell'architettura* (Milan: Feltrinelli, 1966). It was translated in French, but not in English.
5. The exhibition 'International Style', curated at the MoMA by Henry Russel Hitchcock and Philip Johnson in 1932, treated European modernism as a 'classic' style, isolating it from the socio-political context from which it emerged: 'we were ignorant of the political dimension of the art; for us it was revolutionary, but only aesthetically. Our Job', Johnson remembers, 'was to advocate, to sell these new cultural innovations to the wealthy and powerful. ... I must say that, if naive, our enthusiasm for the avant-garde was nevertheless real; we loved it; we never thought of ourselves as servants of the market system, the very system the work opposed. Though, of course, we were.' Philip Johnson, Jeffrey Kipnis, 'A Conversation Around the Avant-Garde', in *Autonomy and Ideology. Positioning an Avant-Garde in America*, ed. Robert Somol (New York: Monacelli Press, 1997), 42.
6. 'La Tendenza' is an Italian movement that conventionally spans from the publication of Aldo Rossi's *The Architecture of the City* (1966) to Paolo Portoghesi's Strada Novissima at the 1980 Venice Biennale. It developed the antimodernist, vernacular attitude of postwar Italian architecture towards a focus on urban issues and an operative relationship with history, claiming inspiration from the Enlightenment. Its high point was the architectural section of the 1973 Milan Triennale, which gathered around Rossi other protagonists of the movement: see *Architettura razionale*, ed. Ezio Bonfanti, Rosaldo Bonicalzi, Aldo Rossi,

- Massimo Scolari, Daniele Vitale (Milan: Franco Angeli, 1973). 'La Tendenza' has been recently analysed by an exhibition at the Pompidou centre (20 June–10 September 2012): see the catalogue *La Tendenza: Architectures italiennes 1965–1985*, ed. Frédéric Migayrou (Paris: Centre Pompidou, 2012).
7. 'The project for the new offices of the House of Representatives in Rome ... aimed at a formal absoluteness already evident in its plan, with the proposal of the first basic shape in geometry. It certainly belongs to a language approach, to the necessity of a style, of an identity.' Gianugo Polesello, 'La classificazione del progetto', in *Gianugo Polesello: Architetture 1960–1992*, ed. Mirko Zardini (Milan: Electa, 1992), 14 (author's translation).
 8. Ibid.
 9. Francesco Tentori, 'Nell'epoca dei linguaggi personali,' in *Materiali per il corso di progettazione urbana* (Venice: Luav-Dpa, 1989), frames the long post-war period of Italian architecture as an 'eclecticism of random choices' (p. 114). It is the text of a lecture, significantly entitled 'In the Epoch of Personal Languages', where he harshly attacked both Gregotti and Rossi.
 10. Polesello was a member of the Italian Parliament for the Communist Party, 1983–87.
 11. See *Gianugo Polesello: Dai quaderni*, ed. Gundula Rakowitz (Padua: Il poligrafo, 2015).
 12. Francesco Tentori, first coordinator of the Venetian PhD programme in architectural composition, organised as its initial activity a cycle of lectures about the masters who were important for his generation. See *Lezioni di progettazione: 10 maestri dell'architettura italiana*, ed. Marina Montuori (Milan: Electa, 1988).
 13. Bobby Troup's song was a Cole Porter hit in 1946, but the Rolling Stones' version, released in 1964, would work better as a (contradictory) soundtrack for my text.
 14. Pippo Ciorra – who attended that Venetian PhD programme – addresses various paradoxes of this backlash of the 1960s: '(Un)political', in *This Thing Called Theory*, ed. Teresa Stoppani, Giorgio Ponzio, and George Themistokleous (London: Routledge, 2016).
 15. See Bernard Cache, 'Obama versus Irresponsibility: Can Moderation Triumph over Greed', in *Projectiles* (London: AA Publications, 2011). The fall of the Berlin Wall was a major event especially for my masters' generation. Massimo Scolari, interviewed by Léa-Catherine Szacka and Thomas Weaver, *AA Files*, 65 (2012): 43, remembers 'Gianugo Polesello behaving as if his world had just collapsed. For a lot of the Venetian designers and scholars, this ideology formed a kind of shield or umbrella under which a dogma of sorts started to develop which didn't allow for any kind of experimentation or discussion.'

Biography

Giovanni Corbellini, architect with a PhD in architectural design, and a critic of contemporary architecture, has taught in Venice, Ferrara and Milan. He is currently assistant professor at the University of Trieste. The author of many essays, his latest books are: *Ex libris: 16 parole chiave dell'architettura contemporanea* (22 publishing, 2007, republished by LetteraVentidue, 2015), *Bioreboot: The architecture of R&Sie^(m)* (Princeton Architectural Press, 2009), *Dr. Corbellini's Pills* (LetteraVentidue, 2010, translated into French, 2012, and English, 2016), *Housing is Back in Town* (LetteraVentidue, 2012), *Parametrico nostrano* (with Cecilia Morassi, LetteraVentidue, 2013), *Go Re-cycle!* (e-book edited with Eva De Sabbata, LetteraVentidue, 2014), *Lo spazio dicibile. Architettura e narrativa* (LetteraVentidue, 2016; English edition forthcoming).

Footprint is a peer-reviewed journal presenting academic research in the field of architecture theory. The journal encourages the study of architecture and the urban environment as a means of comprehending culture and society, and as a tool for relating them to shifting ideological doctrines and philosophical ideas. The journal promotes the creation and development – or revision – of conceptual frameworks and methods of inquiry. The journal is engaged in creating a body of critical and reflexive texts with a breadth and depth of thought which would enrich the architecture discipline and produce new knowledge, conceptual methodologies and original understandings.

In this issue, the following papers were peer-reviewed: 'On Bigness and the Problem of Urban Form'; 'Reconceptualisation of Architects' Intentionality in Computational Form Generation: A Tripartite Model'; 'The Diagrammatic Inquiry of Architectural Media'; 'Calling Rowe: After-lives of Formalism in the Digital Age'.

Footprint

footprint.tudelft.nl

Footprint is published by Jap Sam Books and the Architecture Theory Chair, Faculty of Architecture and The Built Environment, TU Delft,

PO Box 5043, 2600 GA Delft, The Netherlands

+31 (0)152781830, editors@footprintjournal.org

Issue's Editors

Stavros Kousoulas

Jorge Mejía Hernández

Production Editors

Andrej Radman

Nelson Mota

Layout Editor

Ania Molenda

Copy Editor

Heleen Schröder

Editorial Board

Alper Semih Alkan

Karan August

Robert Alexander Gorny

Dirk van den Heuvel

Stavros Kousoulas

Jorge Mejía Hernández

Nelson Mota

Andrej Radman

Negar Sanaan Bensi

Marc Schoonderbeek

FP Advisory Board

Dr. Stephen Cairns

Prof. K. Michael Hays

Prof. Hilde Heynen

Prof. Ákos Moravánszky

Prof. Michael Müller

Prof. Frank Werner

Prof. Gerd Zimmermann

Architecture Theory

Interim Chair

Dick van Gameren

For hard copies, back issues and subscriptions, see

Jap Sam Books at

www.japsambooks.nl

For the current call for papers and submission guidelines, see the *Footprint* website.

© Architecture Theory Chair, TU Delft. Purchasing a copy or downloading the journal from the internet is designated for research and study purposes. The contents of *Footprint* may not be reproduced, distributed or used for commercial purposes without prior permission by the journal's editorial board.



Delft University of Technology

JAPSAM
BOOKS

ISBN: 978-94-90322-98-4

www.japsambooks.nl

ISSN: 1875-1504